range, by adding acids, where the lupine seeds are comminuted and/or shaped to form discoid flakes so that after pre-crushing of the shelled or non-shelled seeds, the comminution of the seeds is carried out by a cooled flocculating roller, and that the seeds are heated by an indirect supply of heat substantially with exclusion of water, and that after de-oiling the depletion of the flakes of substances soluble in the acid range, is performed by aqueous extraction, with a refined product of a reduced alkaloid level and an aqueous extract being obtained.

a1

40. A method according to claim 39,

wherein after pre-crushing of the shelled or non-shelled seeds, the comminution of the seeds is carried out by means of a flocculating roller, with the flocculating roller being cooled.

41. A method according to claim 39,

wherein the seeds are screened by shape and size prior to comminution and/or shaping and are subsequently shelled.

42. A method according to claim 39,

wherein the shelling is carried out with a technique wherein the lupine

seeds are halved and separated from the shells.

43. A method according to claim 40,

wherein the flocculating roller is cooled to a temperature lower than the denaturation temperature of the lupine proteins.

a1

44. A method according to claim 39,

wherein the discoid flakes have a platelet thickness of less than 1 mm.

45. A method according to claim 39,

wherein the indirect heat supply is carried out by a heat pan.

46. A method according to claim 39,

wherein the indirect heat supply deactivates seed-inherent enzymes, while proteins therein substantially retaining native properties.

47. A method according to claim 39,

wherein ethanol is used as solvent in de-oiling.

48. A method according to claim 39,

wherein one of industrial hexane, pentane, hexane, heptane or supercritical CO_2 is used as a solvent for de-oiling the discoid flakes.

49. A method according to claim 47,

wherein the de-oiling process is combined with a mechanical oil separation process with the mechanical oil separation process using ethanol/water mixtures in combination with centrifuging techniques.

50. A method according to claim 39,

wherein the de-oiled discoid flakes are de-solventised.

51. A method according to claim 50,

wherein the de-solventising is carried out under substantially water-free conditions.

52. A method according to claim 50,

wherein the de-solventising is carried out with a superheated solvent.

53. A method according to claim 39,

wherein the indirect heat supply to de-oiled flakes is carried out with a

heat pan.

54. A method according to claim 50,

wherein an oil percentage in de-oiled and de-solventised flakes, relative to the percentage of dry solids, is lower than 2%.

A1

55. A method according to claim 50,

wherein the de-oiled and de-solventised flakes are passed on to a disembitterment process including:

in a first step, the flakes are supplied into an aqueous acid medium for isolation of substances soluble in the acid medium for obtaining an aqueous acid extract as a refined product insoluble in the acid range, and

in a second step, the refined product which is insoluble in the acid range is supplied into an aqueous alkaline medium for obtaining aqueous extracts and alkaline refined products insoluble in an acid range.

56. A method according to claim 50,

wherein shells are added to de-oiled and de-solventised flakes, which are passed on, together with the flakes, to a disembitterment process including:

in a first step, the flakes with the shells are supplied into an aqueous acid

medium for isolation of substances soluble in the acid medium to provide an aqueous acid extract and a refined product insoluble in the acid range, and

in a second step, the refined product which is insoluble in the acid range is supplied into an aqueous alkaline medium for obtaining aqueous extracts and alkaline refined products insoluble in an acid range.

a1

57. A method according to claim 56,

wherein prior to the addition to the flakes, the shells are ground.

58. A method according to claim 55,

wherein the aqueous acid medium in the first process step has a temperature lower than room temperature.

59. A method according to claim 55,

wherein isolation of the aqueous acid extract from the refined product insoluble in the acid range is carried out centrifugally by a decanter, and the decanter is cooled and flushed in water or an extract in a zone of a solids accumulator.

60. A method according to claim 55,

wherein in the second process step a temperature for extraction in the aqueous alkaline medium is higher than the room temperature.

61. A method according to claim 55,

wherein the first process step is in a multi-stage aqueous acid process, and further comprising a process step for adjustment of a ratio between the refined product insoluble in the acid range and the aqueous extract to less than 10:1, one part of the aqueous extract from an immediately preceding process step is admixed.

62. A method according to claim 55,

further comprising a process step for adjustment of a ratio between the refined product insoluble in the acid range and the aqueous extract of more than 10:1, an outward transfer of one part of the aqueous extract is carried out within an immediately preceding process step.

63. A method according to claim 55, further comprising a process step for obtaining a product from the aqueous acid extract an isolation of substances is carried out by a separator so that a product is obtained having a concentration of dry solids at least 10%, a protein concentration in the dry solids higher than

70%, and an alkaloid level lower than 0.5%.

64. A method according to claim 63,

wherein in isolation of the substances by means of a separator is carried out in the first process step using aqueous acid process steps, and the isolation of the substances is carried out after one of the first process step or a preceding process step.

65. A method according to claim 55,

wherein the aqueous extraction includes a closed circuit providing the following process stages:

the de-oiled flakes are suspended in water at a pH level of substantially between 3.5 to 5.5 for separation of substances soluble in the acid range,

for protein extraction, suspended flakes are mixed with lye at a pH level between 7.0 and 8.5,

suspension is separated, by a decanter, to obtain a refined product and the protein extract,

an acid medium is supplied to the protein extract again to achieve fractioning of the whey and protein curds, and

the whey is supplied again completely to the pre-extracted flakes at a pH

level of substantially between 3.5 to 5.5.

66. A method according to claim 65,

wherein protein extraction is carried out in pH level stages for achieving protein fractioning.

67. A method according to claim 65,

wherein the refined product has a protein concentration less than 20% in the dry solids, a roughage percentage is higher than 60%, and a percentage of soluble carbohydrates is lower than 5%.

68. A method according to claim 65,

wherein isolation of whey and protein curds containing more than 85% of proteins in the dry solids, is carried out by a decanter.

69. A method according to claim 68,

wherein extracted whey is subjected to a first purification by means of a separator, then to a thermal treatment, and finally a second purification in a separator.

70. A method according to claim 69,

wherein twice purified whey is supplied into a process again, wherein the solids obtained in a first separation are subjected to further processing in a protein leg and with outward transfer of the solids obtained in another separation.

71. A method according to claim 65,

wherein the refined product is fractioned by particle sizes into at least 2 fractions after or during a drying stage.

72. A method according to claim 65,

wherein after drying, pressed protein curds have a protein dispersibility index (PDI) of 60 to 90% and a water-absorption capacity of less than 2 g/g at a pH level of about 7 and a temperature of 20 to 30°C.

73. A method according to claim 65,

wherein the protein curds are confectioned by a hydro-thermal treatment to form a water binding product, with application of a temperature higher than 65°C, for drying the protein curds and with a water percentage at a beginning of drying of less than 85%, while a water absorption capacity of the water binding product is higher than 4.0 g/g.

74. A method according to claim 39,

wherein mixtures of obtained roughage and the protein isolates are produced, having protein level ranges between 20 and 70%, roughage concentration ranges between 30 and 80%, and a water absorption capacity is higher than 5 g/g.

75. A method according to claim 39,

wherein shells separated prior to the de-oiling are mixed and dried with the aqueous extract at pH levels from 3.5 to 5.5

76. A method of treating and processing alkaloid-, oil- and protein-containing seeds for the extraction of products from the seeds by targeted fractionation, whereby the comminuted seeds are de-oiled by introducing a solvent and the residue is depleted of substances soluble in an acid range, by adding acids, where the seeds are comminuted and/or shaped to form discoid flakes so that after pre-crushing of the shelled or non-shelled seeds, the comminution of the seeds is carried out by a cooled flocculating roller, and that the seeds are heated by an indirect supply of heat substantially with exclusion of water, and that after de-oiling the depletion of the flakes of substances soluble in

the acid range, is performed by aqueous extraction, with a refined product of a reduced alkaloid level and an aqueous extract being obtained.

77. A method in accordance with claim 76,

wherein the seeds are selected from the group consisting of rape, linseed, soybeans, peanuts, peas and horse peas.

78. A method according to claim 42, wherein the denaturation temperature is lower than 35°C.

79. A method according to claim 46, wherein platelet thickness ranges between 200 and 400 µm.

80. A method according to claim 52, wherein the superheated solvent is hexane.

81. A method according to claim 54, wherein the oil percentage is less than 1%.

82. A method according to claim 57, wherein the particle size is less

than 5 mm.

83. A method according to claim 60, wherein the temperature for extraction ranges between 35°C and 45°C.

84. A process according to claim 63, wherein the concentration of dry solids is higher than 16%, the protein concentrates in the dry solids is higher than 85% and an alkaloid level is less than 0.1% in the dry solids.

85. A process according to claim 67, wherein the roughage concentration is higher than 70% and the percentage of soluble carbohydrates is lower than 1%.

86. A method according to claim 68, wherein the whey and protein curds contain more than 90% proteins in dry solids.

87. A method according to claim 71, wherein the refined product is refined by particle sizes into at least three fractions after or during a drying step.

88. A method according to claim 73, wherein the temperature is higher

than 85°C, a water percentage at the beginning of the drying step is less than 75% and the water absorption capacity of the water binding product is higher than 5 g/g.

89. A method according to claim 74, wherein the water absorption capacity is higher than 7 g/g.